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## NOTICE OF ALLOWANCE AND FEE(S) DUE

22852 7590 08/03/2010

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER  
LLP  
901 NEW YORK AVENUE, NW  
WASHINGTON, DC 20001-4413

EXAMINER

DAFTUAR, SAKET K

ART UNIT

PAPER NUMBER

2451

DATE MAILED: 08/03/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/712,396

11/14/2003

Steven Y. Zhou

8971.0005

6846

TITLE OF INVENTION: SYSTEMS AND METHODS FOR ADDRESS SPACING IN A FIREWALL CLUSTER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$0	\$0	\$1510	11/03/2010

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

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A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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22852 7590 08/03/2010

**FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER**  
LLP  
901 NEW YORK AVENUE, NW  
WASHINGTON, DC 20001-4413

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(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/712,396 11/14/2003 Steven Y. Zhou 8971.0005 6846

TITLE OF INVENTION: SYSTEMS AND METHODS FOR ADDRESS SPACING IN A FIREWALL CLUSTER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1510 \$0 \$0 \$1510 11/03/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
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DAFTUAR, SAKET K 2451 709-245000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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WASHINGTON, DC 20001-4413

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 986 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 986 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/712,396	ZHOU, STEVEN Y.	
	<b>Examiner</b>	<b>Art Unit</b>	
	SAKET K. DAFTUAR	2451	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/14/2010.
2. ☒ The allowed claim(s) is/are 1, 3-7, 10-12, 17,21-22, 24-33,37-40 and 43-47.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
|--|---|

/S. K. D./  
Examiner, Art Unit 2451

/John Follansbee/  
Supervisory Patent Examiner, Art Unit 2451

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with applicant assigned representative Mr. Berkowitz, Registration Number 36,743 on July 27<sup>th</sup>, 2010.

2. Claims 1, 3-7, 10-12, 17,21-22, 24-33,37-40 and 43-47 are allowed.

The application has been amended as follows:

Claim 1. (Previously Presented) A method for addressing packets in a firewall cluster within a single network, the firewall cluster including a plurality of firewall nodes comprising one or more processing units, the method comprising:

selecting, from the firewall cluster within the single network, a first firewall node for processing a first packet, the first firewall node being assigned to a first node number;

receiving, at a first processing unit associated with the first firewall node, the first packet;

modifying, by the first processing unit, a first address of the first packet into a first modified address such that a quadrant identifier determined using a hash function and modulo division from the first modified address corresponds to the first node number assigned only to the first firewall node;

selecting, from the firewall cluster within the single network, a second firewall node for processing a second packet, the second firewall node being assigned to a second node number;

receiving, at a second processing unit associated with the second firewall node, the second packet, the second processing unit being different than the first processing unit;

modifying, by the second processing unit, a second address of the second packet into a second modified address such that a quadrant identifier determined using a hash function and modulo division from the second modified address corresponds to the second node number assigned only to the second firewall node, wherein the second modified address of the second packet does not conflict with the first modified address of the first packet;

forwarding the first packet based on the first modified address; and

forwarding the second packet based on the second modified address.

Claim 2. (Cancelled).

Claim 3. (Previously Presented) The method of claim 1, further comprising:

assigning to the first firewall node a first region based on a N-tuple space.

Claim 4. (Previously Presented) The method of claim 3, further comprising:  
using the first address of the first packet, such that the first address represents a point within the first region.

Claim 5. (Original) The method of claim 4, further comprising:  
using N address values as the N-tuple, such that the N address values represent the point.

Claim 6. (Previously Presented) The method of claim 1, further comprising:  
using a N-tuple space, such that N is equal to a value of at least two.

Claim 7. (Previously Presented) The method of claim 3, further comprising:  
assigning to the second firewall node a second region based on the N-tuple space, such that the first region is separate from the second region.

Claim 8. (Cancelled).

Claim 9. (Cancelled).

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Claim 10. (Previously Presented) A method for addressing packets associated with a plurality of processing units, each processing unit being associated with one of a plurality of firewall nodes in a firewall cluster within a single network, the method comprising:

- selecting, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

- receiving, at the first processing unit, the packet;

- reading, at the first processing unit, an N-tuple address of the received packet;

- determining, by the first processing unit, whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier and a firewall node number corresponding to the N-tuple space assigned to the first processing unit, wherein an N-tuple space assigned to each of the plurality of processing units is different, and wherein the quadrant identifier is determined from the N-tuple address using a hash function and modulo division;

- sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit;

- determining, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other plurality of processing units; and



sending the packet based on the modified N-tuple address.

Claim 11. (Original) The method of claim 10, wherein the reading step further comprises:

reading as the N-tuple address, a plurality of values from the received packet.

Claim 12. (Original) The method of claim 11, wherein the reading step further comprises:

reading at least a source port.

Claim 13. - 16. (Cancelled).

Claim 17. (Previously Presented) The method of claim 10, wherein the step of determining the modified N-tuple further comprises:

adding a value to the N-tuple address, such that the modified N-tuple address is within the N-tuple space assigned to the first processing unit.

Claim 18. - 20. (Cancelled).

Claim 21. (Previously Presented) The method of claim 10, further comprising:  
using a computer as the first processing unit.

Claim 22. (Previously Presented) The method of claim 10, further comprising:

using a router as the first processing unit.

Claim 23. (Cancelled).

Claim 24. (Previously Presented) A method of addressing packets in a firewall cluster within a single network, wherein the firewall cluster comprises a set of processing units, each processing unit being associated with a firewall node, the method comprising:

- selecting, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

- receiving, at the first processing unit, the packet;

- reading, at the first processing unit, an N-tuple address of the received packet;

- determining a quadrant identifier based on the read N-tuple address, a hash function, and modulo division;

- determining whether the read N-tuple address corresponds to the first processing unit based on the quadrant identifier;

- sending the packet with the N-tuple address, when the quadrant identifier corresponds to the first processing unit; [[and]]

- determining, when the quadrant identifier does not correspond to the first processing unit, a modified N-tuple address that corresponds to the first processing unit,

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such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

sending the packet based on the modified N-tuple address.

Claim 25. (Previously Presented) The method of claim 24, further comprising: assigning each of the set of processing units a firewall node number.

Claim 26. (Previously Presented) The method of claim 25, further comprising: determining whether the N-tuple address corresponds to the first processing unit based on the quadrant identifier and the firewall node number.

Claim 27. (Currently Amended) A system for addressing packets in a firewall cluster within a single network, the firewall cluster including a plurality of firewall nodes, the system comprising:

a memory; and

a processor configured to:

select ~~[[means for selecting]]~~, from the firewall cluster within the single network, a first firewall node for processing a first packet, the first firewall node being assigned to a first node number;

receive ~~[[means for receiving]]~~, at a first processing unit associated with the first firewall node, the first packet;

modify ~~[[means for modifying]]~~ a first address of the first packet into a first modified address such that a quadrant identifier determined using a hash function and modulo division from the first modified address corresponds to the first node number assigned only to the first firewall node;

select ~~[[means for selecting]]~~, from the firewall cluster within the single network, a second firewall node for processing a second packet, the second firewall node being assigned to a second node number;

receive ~~[[means for receiving]]~~ at a second processing unit associated with the second firewall node, the second packet, the second processing unit being different than the first processing unit;

modify ~~[[means for modifying]]~~ a second address of the second packet into a second modified address such that a quadrant identifier determined using a hash function and modulo division from the second modified address corresponds to the second node number assigned only to the second firewall node, wherein the second modified address of the second packet does not conflict with the first modified address of the first packet;

forward ~~[[means for forwarding]]~~ the first packet based on the first modified address; and

forward ~~[[means for forwarding]]~~ the second packet based on the second modified address.

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Claim 28. (Currently Amended) A system for addressing packets associated with one or more processing units, each processing unit being associated with a firewall node in a firewall cluster within a single network, the system comprising:

a memory; and

a processor configured to:

select ~~[[means for selecting]]~~, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

receive ~~[[means for receiving]]~~, at the first processing unit, the packet;

read ~~[[means for reading]]~~, at the first processing unit, an N-tuple address of the received packet;

determine ~~[[means for determining]]~~ whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier and a firewall node number corresponding to the N-tuple space assigned to the first processing unit, wherein the N-tuple space assigned to each of the processing units is different, and wherein the quadrant identifier is determined from the N-tuple address using a hash function and modulo division;

send ~~[[means for sending]]~~ the packet with the N-tuple address, when it is determined that the N-tuple address is within an N-tuple space assigned to the first processing unit;

determine ~~[[means for determining]]~~, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

send ~~[[means for sending]]~~ the packet based on the modified N-tuple address.

Claim 29. (Currently Amended) A firewall cluster within a single network including firewall nodes associated with processing units, comprising:

a memory; and

a processor configured to:

select ~~[[means for selecting]]~~, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

receive ~~[[means for receiving]]~~, at the first processing unit, the packet;

read ~~[[means for reading]]~~, at the first processing unit, an N-tuple address of the received packet;

determine ~~[[means for determining]]~~ a quadrant identifier based on the read N-tuple address, a hash function, and modulo division;

determine ~~[[means for determining]]~~ whether the read N-tuple address corresponds to the first processing unit based on the quadrant identifier;

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send ~~[[means for sending]]~~ the packet with the N-tuple address, when the quadrant identifier corresponds to the first processing unit;

determine ~~[[means for determining]]~~, when the quadrant identifier does not correspond to the first processing unit, a modified N-tuple address that corresponds to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

send ~~[[means for sending]]~~ the packet based on the modified N-tuple address.

Claim 30. (Previously Presented) A system including a firewall cluster within a single network including a plurality of firewall nodes, the firewall nodes being associated with one or more processing units, said system comprising:

at least one memory comprising:

code that selects, from the firewall cluster within the single network, a first firewall node for processing a first packet, the first firewall node including a first processing unit, the first firewall node being assigned to a first node number;

code that receives, at the first processing unit, the first packet;

code that modifies a first address of the first packet into a first modified address such that a quadrant identifier determined using a hash function and modulo division from the first modified address corresponds to the first node number assigned only to the first firewall node;

code that selects, from the firewall cluster within the single network, a second firewall node for processing a second packet; the second firewall node

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including a second processing unit, the second firewall node being assigned to a second node number;

code that receives, at the second processing unit, the second packet, the second processing unit being different than the first processing unit;

code that modifies a second address of the second packet into a second modified address such that a quadrant identifier determined using a hash function and modulo division from the second modified address corresponds to the second node number assigned only to the second firewall node, wherein the second modified address of the second packet does not conflict with the first modified address of the first packet;

code that forwards the first packet based on the first modified address; and

code that forwards the second packet based on the second modified address; and

at least one processing unit for executing the code.

Claim 31. (Previously Presented) A system including a firewall cluster within a single network including a plurality of firewall nodes, the firewall nodes being associated with processing units, the system comprising:

at least one memory comprising:



code that selects, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

code that receives, at the first processing unit, the packet;

code that reads, at the first processing unit, an N-tuple address of the received packet;

code that determines whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier and a firewall node number corresponding to the N-tuple space assigned to the first processing unit, wherein an N-tuple space assigned to each of the processing units is different, and wherein the quadrant identifier is determined from the N-tuple address using a hash function and modulo division;

code that sends the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit;

code that determines, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

code that sends the packet based on the modified N-tuple address;

and

at least one processing unit for executing the code.

Claim 32. (Original) The system of claim 31, wherein code that reads further comprises:

code that reads as the N-tuple address, a plurality of values from the received packet.

Claim 33. (Original) The system of claim 32, wherein code that reads the plurality of values further comprises:

code that reads at least a source port.

Claim 34. - 36. (Cancelled).

Claim 37. (Previously Presented) A firewall cluster including a plurality of firewall nodes within a single network, the firewall nodes being associated with processing units, the firewall cluster comprising:

at least one memory comprising

code that selects, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

code that receives, at the first processing unit, the packet;

code that reads, at the first processing unit, an N-tuple address of the received packet;

code that determines a quadrant identifier based on the read N-tuple address, a hash function, and modulo division;

code that determines whether the read N-tuple address corresponds to the first processing unit based on the quadrant identifier;

code that sends the packet with the N-tuple address, when the quadrant identifier corresponds to the first processing unit;

code that determines, when the quadrant identifier does not correspond to the first processing unit, a modified N-tuple address that corresponds to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

code that sends the packet based on the modified N-tuple address; and

at least one processing unit for executing the code.

Claim 38. (Currently Amended) A non-transitory computer-readable storage medium comprising instructions which, when executed by a processing unit, perform a method for addressing packets in a firewall cluster within a single network, the firewall cluster including a plurality of firewall nodes, the method including:

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selecting, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node being associated with a first processing unit;

receiving, at the first processing unit, the packet;

reading, at the first processing unit, an N-tuple address of the received packet;

determining whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier and a firewall node number corresponding to the N-tuple space assigned to the first processing unit, wherein an N-tuple space assigned to each of the processing units is different, and wherein the quadrant identifier is determined from the N-tuple address using a hash function and modulo division;

sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit; and

determining, when it is determined that the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

sending the packet based on the modified N-tuple address.

Claim 39. (Currently Amended) The non-transitory computer-readable storage medium of claim 38, wherein reading further comprises:

reading as the N-tuple address, a plurality of values from the received packet.

Claim 40. (Currently Amended) The non-transitory computer-readable storage medium of claim 39, wherein reading the plurality of values further comprises:  
reading at least a source port.

Claim 41. - 43. (Cancelled).

Claim 44. (Currently Amended) A non-transitory computer-readable storage medium comprising instructions which, when executed by a processing unit, perform a method for addressing packets in a firewall cluster within a single network, the firewall cluster including a plurality of firewall nodes, the method including:

selecting, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

receiving, at the first processing unit, the packet;

reading, at the first processing unit, an N-tuple address of the received packet;

determining a quadrant identifier based on the read N-tuple address, a hash function, and modulo division;

determining whether the read N-tuple address corresponds to the first processing unit based on the quadrant identifier;

sending the packet with the N-tuple address, when the quadrant identifier corresponds to the first processing unit;

determining, when the quadrant identifier does not corresponds to the first processing unit, a modified N-tuple address that corresponds to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and

sending the packet based on the modified N-tuple address.

Claim 45. (Currently Amended) A non-transitory computer-readable storage medium comprising instructions which, when executed by a processing unit, perform a method for addressing packets in a firewall cluster within a single network, the firewall cluster including a plurality of firewall nodes comprising one or more processing units, the method including:

selecting, from the firewall cluster within the single network, one of the firewall nodes within the single network for processing a first packet, the selected firewall node being associated with a first processing unit and assigned to a first node number;

receiving, at the first processing unit, the first packet;

modifying a first address of the first packet into a first modified address such that a quadrant identifier determined using a hash function and modulo division from the first modified address corresponds to the first node number assigned only to the selected firewall node;

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selecting, from the firewall cluster within the single network, a second firewall node for processing a second packet, the second firewall node being assigned to a second node number;

receiving, at a second processing unit associated with the second firewall node, the second packet, the second processing unit being different than the first processing unit;

modifying, by the second processing unit, a second address of the second packet into a second modified address such that a quadrant identifier determined using a hash function and modulo division from the second modified address corresponds to the second node number assigned only to the second firewall node, wherein the second modified address of the second packet does not conflict with the first modified address of the first packet;

forwarding the first packet based on the first modified address; and

forwarding the second packet based on the second modified address.

### **EXAMINER'S REASON FOR ALLOWANCE**

3. The following is an examiner's statement of reasons for allowance: Below are the underlined statement, for instance as per claim 10, none of the cited prior art discloses or suggests:

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selecting, from the firewall cluster within the single network, one of the firewall nodes for processing a packet, the selected firewall node including a first processing unit;

receiving, at the first processing unit, the packet;

reading, at the first processing unit, an N-tuple address of the received packet;

determining, by the first processing unit, whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier and a firewall node number corresponding to the N-tuple space assigned to the first processing unit, wherein an N-tuple space assigned to each of the plurality of processing units is different, and wherein the quadrant identifier is determined from the N-tuple address using a hash function and modulo division;

sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit;

determining, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other plurality of processing units; and

sending the packet based on the modified N-tuple address.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably



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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAKET K. DAFTUAR whose telephone number is (571)272-8363. The examiner can normally be reached on 7:00 - 3:30pm M-W.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. K. D./

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Examiner, Art Unit 2451

/John Follansbee/

Supervisory Patent Examiner, Art Unit 2451